

### **LISTING OF CLAIMS**

This listing of claims replaces all prior versions and listings of claims in the patent application.

Claims 1-22 (canceled).

Claim 23 (currently amended): A method for transmitting information via a transmission medium having particular transmission characteristics, with the aid of a multicarrier method, from a first unit to a second unit, the method comprising the steps of:

using a first transmit signal to transmit the information, the first transmit signal exhibiting a plurality of frequency-specific subcarriers;

determining, in the first unit, frequency-selective transmission characteristics of the transmission medium using a second transmission signal sent out by the second unit, the second transmission signal exhibiting at least one frequency-specific subcarrier; ~~and~~

adapting, in the first unit, the plurality of frequency-specific subcarriers of the first transmit signal to the frequency-selective transmission characteristics of the transmission medium which have been determined;

determining at least one of frequency-selective amplitude-specific transmission characteristics and frequency-selective phase-specific transmission characteristics of the transmission medium as the transmission characteristics; and

averaging at least one of the frequency-selective amplitude-specific transmission characteristics and the frequency-selective phase-specific transmission characteristics of adjacent subcarriers of one of the first and second transmit signals for determining the frequency-selective transmission characteristics of the transmission medium.

Claim 24 (previously presented): A method for transmitting information as claimed in claim 23, the method further comprising the steps of:

determining, in the second unit, the frequency-selective transmission characteristics of the transmission medium;

adapting, in the second unit, to the frequency-selective transmission characteristics of the transmission medium which have been determined, a plurality of frequency-specific subcarriers of the second transmit signal formed with the aid of a multicarrier method and transmitted from the second unit to the first unit.

Claim 25 (canceled).

Claim 26 (currently amended): A method for transmitting information as claimed in claim ~~25~~23, the method further comprising the step of:

determining a transfer function of the transmission medium during the step of determining the frequency-selective transmission characteristics of the transmission medium.

Claim 27 (previously presented): A method for transmitting information as claimed in claim 26, the method further comprising the step of:

representing the frequency-selective amplitude-specific transmission characteristics of the transmission medium by an absolute value of the transfer function which has been determined.

Claim 28 (previously presented): A method for transmitting information as claimed in claim 23, the method further comprising the steps of:

determining the frequency-selective transmission characteristics using both the first and second transmit signals; and

utilizing at least one subcarrier of one of the first and second transmit signals for transmitting at least one pilot signal.

Claim 29 (previously presented): A method for transmitting information as claimed in claim 28, the method further comprising the step of:

modulating the at least one subcarrier using a phase modulation method for transmitting the at least one pilot signal, wherein the pilot signal exhibits a particular reference amplitude.

Claim 30 (canceled).

Claim 31 (currently amended): A method for transmitting information as claimed in claim ~~25~~23, the method further comprising the steps of:

determining at least one of time-selective amplitude-specific transmission characteristics and time-selective phase-specific transmission characteristics of the transmission medium;

storing a plurality of the frequency-selective amplitude-specific transmission characteristics and frequency-selective phase-specific transmission characteristics, determined over a period of time, in the respective one of the first and second units;

forming, in each case, an average value of the at least one of the stored frequency-selective amplitude-specific transmission characteristics and the frequency-selective phase-specific transmission characteristics; and

adapting the subcarriers of the respective one of the first and second transmit signals to be transmitted to the transmission characteristics of the transmission medium which are averaged over time.

Claim 32 (currently amended): A method for transmitting information as claimed in claim ~~25~~23, the method further comprising the steps of:

transmitting the determined frequency-selective transmission characteristics from the first unit to the second unit; and

adapting the frequency-specific subcarriers of the second transmit signal to the transmission characteristics of the transmission medium in the second unit.

Claim 33 (previously presented): A method for transmitting information as claimed in claim 32, wherein only changes with time of the transmission characteristics are transmitted by the first unit to the second.

Claim 34 (previously presented): A method for transmitting information as claimed in claim 27, the method further comprising the step of:

multiplying subcarriers of the first and second transmit signals by one of an inverse of the determined transfer function and an inverse of the absolute value of

the determined transfer function in the adaptation of the first and second transmit signals to the transmission characteristics of the transmission medium.

Claim 35 (previously presented): A method for transmitting information as claimed in claim 23, wherein the first and second transmit signals transmitted between the first and second units are transmitted in a time division duplex transmission method.

Claim 36 (previously presented): A method for transmitting information as claimed in claim 24, the method further comprising the steps of:

determining, in the determination of the frequency-selective transmission characteristics, a signal power/noise power ratio for each subcarrier of each of the first and second transmit signals; and

utilizing the respective subcarrier of each of the first and second transmit signals for the transmission of information depending on the respective signal power/noise power ratio determined in each case.

Claim 37 (previously presented): A method for transmitting information as claimed in claim 36, wherein, with a signal power/noise power ratio measured below a limit value, the corresponding subcarrier is not utilized for transmitting information.

Claim 38 (previously presented): A method for transmitting information as claimed in claim 37, the method further comprising the step of:

modulating all subcarriers of the first and second transmit signals which are not utilized for transmitting pilot signals by a same number of modulation levels, wherein the number of modulation levels is determined by a noise power/useful power ratio determined for the transmission medium.

Claim 39 (previously presented): A method for transmitting information as claimed in claim 23, wherein the multicarrier method is implemented by one of an orthogonal frequency division multiplex transmission method and a transmission method based on discrete multitone.

Claim 40 (previously presented): A method for transmitting information as claimed in claim 23, wherein the transmission medium is one of a wireless radio channel and a line-connected transmission channel.

Claim 41 (previously presented): A method for transmitting information as claimed in claim 40, wherein the information is transmitted via power supply lines.

Claim 42 (currently amended): A communication system for transmitting information, comprising:

a first unit;

a second unit; and

a transmission medium having particular transmission characteristics, the transmission medium connecting the first and second units for the transmission of information between the first and second units;

wherein the first unit includes:

a converter for converting, using a multicarrier method, the information to be transmitted into a first transmit signal having a plurality of frequency-specific subcarriers,

a transmitter for transmitting the transmit signal via the transmission medium to the second unit,

an evaluator for determining at least one of frequency-selective amplitude-specific transmission characteristics and frequency-selective phase-specific transmission characteristics of the transmission medium as the transmission characteristics and averaging at least one of the frequency-selective amplitude-specific transmission characteristics and the frequency-selective phase-specific transmission characteristics of adjacent subcarriers of the transmit signal for determining the frequency-selective transmission characteristics of the transmission medium~~determining frequency-selective transmission characteristics of the transmission medium, and~~

an adapter for adapting the frequency-specific subcarriers of the transmit signal to the frequency-selective transmission characteristics of the transmission medium.

Claim 43 (previously presented): A communication system as claimed in claim 42, wherein the second unit further includes a converter for converting, using a multicarrier method, the information to be transmitted into a second transmit signal exhibiting a plurality of frequency-specific subcarriers, an evaluator for determining the frequency-selective transmission characteristics of the transmission medium, an adapter for adapting the frequency-specific subcarriers of the second transmit signal to the frequency-selective transmission characteristics of the transmission medium which have been determined, and a transmitter for transmitting the second transmit signal via the transmission medium to the first unit.

Claim 44 (previously presented): A communication system as claimed in claim 42, wherein the evaluator is designed such that at least one of frequency-selective amplitude-specific transmission characteristics and frequency-selective phase-specific transmission characteristics of the transmission medium are determined as the transmission characteristics.